PATENT ABSTRACTS OF JAPAN

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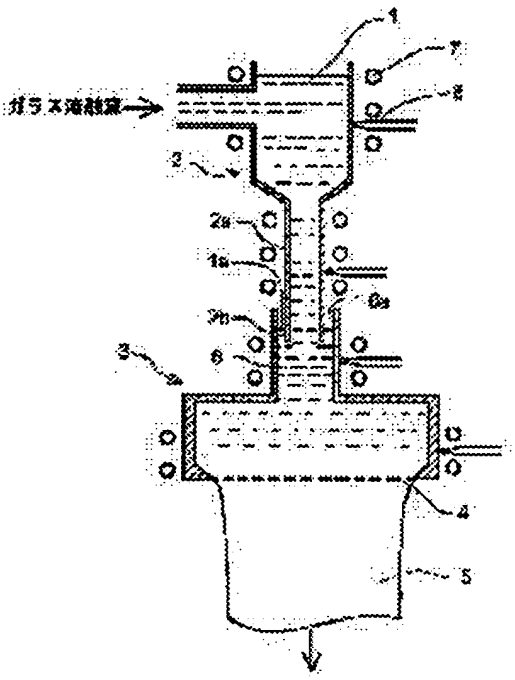
(54) SUPPLY METHOD AND SUPPLY DEVICE FOR MOLTEN GLASS

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a supply method and a supply device which are capable of continuously forming molten glass in a stabilized state of dimensions without changing the flow rate of the molten glass 1 even when the temperature of a lower forming vessel is changed.

SOLUTION: The device has a first vessel 2 which has an outflow pipe 2a at its bottom and soaks the molten glass 1 to a prescribed temperature and a second vessel 6 which is disposed successively at the lower forming vessel 3. The bottom end 2b of the outflow pipe 2a of the first vessel 2 is disposed in an immersion state under the liquid surface 1a of the molten glass 1 in the second vessel 6. Also, the method continuously supplies the molten glass 1 in the state of immersing the bottom end 2b of the outflow pipe 2a of the first vessel 2 under the liquid surface 1a of the molten glass 1 in the second vessel 6 when soaking the molten glass 1 at a prescribed temperature in the first vessel 2 and supplying the molten glass 1 to the second vessel 6 disposed successively from the forming vessel 3.



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CLAIMS

[Claim(s)]
[Claim 1] The supply approach of the melting glass characterized by supplying melting glass continuously in the condition of having made the lower limit section of the excurrent canal of said first tub immersed in the bottom of the oil level of the melting glass in said second tub in case the second tub which soak-izes melting glass to predetermined temperature by the first tub which has an excurrent canal at the pars basilaris ossis occipitalis, and forms melting glass successively from the excurrent canal of said first tub subsequently to a shaping tub is supplied.
[Claim 2] The feeder of the melting glass characterized by having the first tub which has an excurrent canal at the pars basilaris ossis occipitalis, and soak-izes melting glass to predetermined temperature, and the second tub formed successively to a downward shaping tub, and coming to arrange the lower limit section of the excurrent canal of said first tub in the state of immersion to the bottom of the oil level of the melting glass in said second tub.
[Claim 3] The feeder of the melting glass according to claim 2 characterized by having the heating means and temperature sensor which became independent, respectively, having connected with each temperature sensor, and equipping independently the first tub, an excurrent canal, the second tub, and a shaping tub with the thermoregulator which can be controlled automatically for the temperature of internal melting glass with each heating means, respectively.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the supply approach of the melting glass at the time of fabricating glass goods, such as sheet glass, continuously from melting glass, and a feeder.
[0002]
[Description of the Prior Art] When thin sheet glass is generally manufactured when fabricating glass goods continuously for example, After reducing temperature to near the temperature which heated raw materials for glass by the glass smelter, dissolved in melting glass, carried out founding of the melting glass, fully stirred, and was suitable for shaping, as shown in drawing 3 After soak-izing melting glass 1 near the temperature which was suitable for shaping within the first tub 2 which equipped the pars basilaris ossis occipitalis with excurrent canal 2a, it is supplied to the shaping tub 3 through excurrent canal 2a. The melting glass 1 adjusted by molding temperature is pulled out from the abbreviation rectangle-like glass drawer opening 4, and is fabricating sheet glass 5 in the shaping tub 3 continuously.
[0003] By the feeder of conventional melting glass, the melting glass 1 of the first tub 2 is directly supplied to the shaping tub 3 by excurrent canal 2a.
[0004]
[Problem(s) to be Solved by the Invention] However, since the flow rate of the melting glass 1 which the temperature of the melting glass 1 supplied from excurrent canal 2a in connection with it also changes, and is pulled out from the glass drawer opening 4 changes when rising or dropping the temperature of the shaping tub 3, in order to adjust dimensions, such as thickness of sheet glass 5, the whole cross-section dimension of sheet glass 5 changes, and the dimension of sheet glass 5 deviates from the range of an excellent article. In order to amend the flow rate change, when the laying temperature of the first tub 2 or the melting glass 1 in excurrent canal 2a is changed, there is a trouble that the sheet glass 5 of an excellent article is not obtained for [until a flow rate will be in a steady state] a while.
[0005] The purpose of this invention is offering the supply approach of melting glass and feeder which solved the above-mentioned trouble.
[0006]
[Means for Solving the Problem] The supply approach of the melting glass concerning this invention soak-izes melting glass to predetermined temperature by the first tub which has an excurrent canal at the pars basilaris ossis occipitalis. Subsequently, in case melting glass is supplied to the second tub formed successively to a shaping tub from the excurrent canal of said first tub, it is characterized by supplying melting glass continuously in the condition of having made the lower limit section of the excurrent canal of said first tub immersed in the bottom of the oil level of the melting glass in said second tub.
[0007] Moreover, the feeder of the melting glass of this invention has the first tub which has an excurrent canal at the pars basilaris ossis occipitalis, and soak-izes melting glass to predetermined temperature, and the second tub formed successively to a downward shaping tub, and is characterized by coming to arrange the lower limit section of the excurrent canal of said first tub in the state of immersion to the bottom of the oil level of the melting glass in said second tub.
[0008] Furthermore, the feeder of the melting glass of this invention is characterized by having the heating means and temperature sensor which became independent, respectively, having connected with each temperature sensor, and equipping independently the first tub, an excurrent canal, the second tub, and a shaping tub with the thermoregulator which can be controlled automatically for the temperature of internal melting glass with each heating means, respectively.
[0009] In the above-mentioned configuration, it is decided with the viscosity interlocked with the temperature of the melting glass which flows down in an excurrent canal that the flow rate of the melting glass which flows down in the excurrent canal of the pars basilaris ossis occipitalis of the first tub will be the height from the oil level of the melting

glass of the first tub to the oil level of the melting glass in the second tub, i.e., head quantity. Even when changing the temperature of a shaping tub by making the second tub which separates an excurrent canal and a shaping tub and the oil level of melting glass produces intervene so that the flow rate of the melting glass which flows down in an excurrent canal may become fixed in this invention, it is important to maintain uniformly the temperature of the melting glass which flows down an excurrent canal. Moreover, when maintaining the temperature of the melting glass in an excurrent canal uniformly, it is desirable to make small the heating area of an excurrent canal and the second tub.

[0010]

[Function] The first tub to which according to this invention the feeder of melting glass has an excurrent canal at the pars basilaris ossis occipitalis, and soak-izes melting glass to predetermined temperature, Have the second tub formed successively to a downward shaping tub, and the lower limit section of the excurrent canal of the first tub is arranged in the bottom of the oil level of the melting glass in the second tub in the state of immersion. Since melting glass is continuously supplied in the condition of having made the lower limit section of the excurrent canal of the first tub immersed in the bottom of the oil level of the melting glass in the second tub in case melting glass is soak-ized to predetermined temperature by the first tub and melting glass is supplied from the excurrent canal of the first tub subsequently to the second tub When raising the temperature of a shaping tub, the flow rate of the melting glass fabricated increases temporarily, the oil level of the melting glass in the second tub becomes low, the flow rate of the melting glass fabricated by that cause decreases, and the increment in a flow rate is offset. On the other hand, when dropping the temperature of a shaping tub, the flow rate of the melting glass fabricated decreases temporarily, the oil level of the melting glass in the second tub becomes high, the flow rate of the melting glass fabricated by that cause increases, and reduction in a flow rate is offset. Thus, even if it changes the temperature of a shaping tub, the flow rate of melting glass is uniformly maintainable.

[0011] The feeder of the melting glass of this invention moreover, the first tub, an excurrent canal, the second tub, and a shaping tub Since it had the heating means and temperature sensor which became independent, respectively, it connected with each temperature sensor and it has independently the thermoregulator which can be controlled automatically for the temperature of internal melting glass with each heating means, respectively Even when changing the temperature of a shaping tub, the flow rate of melting glass can be further stabilized by controlling independently the temperature of the first tub, an excurrent canal, and the second tub automatically, and maintaining uniformly the temperature of the melting glass in each tub, i.e., viscosity.

[0012]

[Embodiment of the Invention] The explanatory view of the example of this invention is shown in drawing 1 . As for 1, in drawing, 2 the excurrent canal by which, as for 2a, the first tub was connected to the pars basilaris ossis occipitalis of the first tub 2 for melting glass 3 -- a shaping tub -- 4 -- abbreviation rectangle-like glass drawer opening -- 5 -- sheet glass -- 6 -- the second tub -- a heating element is shown as a heating means, 8 shows the thermocouple respectively as a temperature sensor, and 7 gives the same sign to the same part as above-mentioned drawing 3 , and shows it, respectively.

[0013] First, an example of the feeder of the melting glass concerning this invention is explained.

[0014] The first tub 2 which the feeder of this invention has excurrent canal 2a at the pars basilaris ossis occipitalis as shown in drawing 1 , and soak-izes the whole melting glass 1 to high temperature whenever [place constant temperature] rather than molding temperature, The second tub 6 which forms successively to the shaping tub 3 and has insertion opening 6a serves as arrangement to which lower limit section 2b of excurrent canal 2a was made to insert in insertion opening 6a of the second tub 6, and lower limit section 2b of excurrent canal 2a will be immersed in the bottom of oil-level 1a of the melting glass 1 in the second tub 6 at the time of operation of a feeder. The melting glass 1 which was supplied to the shaping tub 3 from the second tub 6, and was adjusted to molding temperature is pulled out by the roller pair (not shown) from the abbreviation rectangle-like glass drawer opening 4, and the sheet glass 5 of a desired dimension configuration is fabricated continuously.

[0015] Moreover, it had the heating element 7 and thermocouple 8 which became independent, respectively, and connected with each thermocouple 8, and the first tub 2, excurrent canal 2a, the second tub 6, and the shaping tub 3 are equipped independently with the thermoregulator (not shown) which can be controlled automatically for the temperature of internal melting glass 1 with each heating element 7, respectively.

[0016] Next, an example of the supply approach of the melting glass concerning this invention is explained.

[0017] By the supply approach of this invention, first, raw materials for glass are heated at about 1600 degrees C or more by the glass smelter (not shown), and it dissolves in melting glass, founding of the melting glass is carried out, air bubbles, a foreign matter, etc. are removed, melting glass is fully stirred, a stria is lost, and temperature is reduced to near the temperature where the viscosity of melting glass becomes the range which is 104-105poise (for example, near 1200 degree C). In case the first tub 2 equipped with excurrent canal 2a for the melting glass which became predetermined temperature as shown in drawing 1 is supplied, the melting glass 1 whole is soak-ized and melting glass 1 is subsequently supplied to the second tub 6 through excurrent canal 2a, lower limit section 2b of excurrent canal 2a

is supplied in the condition that you made it immersed in the bottom of oil-level 1a of melting glass 1. The melting glass 1 supplied in the shaping tub 3 from the second tub 6 is adjusted by the molding temperature which becomes about 105poise suitable for shaping, for example, 1150 degrees C, and the viscosity pulls out continuously the melting glass 1 which became molding temperature with towage means, such as a roller pair (not shown), from the abbreviation rectangle-like glass drawer opening 4, and fabricates it to the sheet glass 5 of a desired dimension configuration.

[0018] When changing 5 degrees C of temperature of the glass drawer opening 4 of the shape of an abbreviation rectangle which is carrying out opening to the pars basilaris ossis occipitalis of the shaping tub 3, for example in order to adjust the cross-section configuration of sheet glass 5, curvature, etc. while fabricating sheet glass 5 continuously by the above-mentioned feeder, change of the cross section of sheet glass 5 is less than 0.5%, and sheet glass 5 does not separate from thick excellent article specification.

[0019] On the other hand, when changing 5 degrees C of temperature of the glass drawer opening 4 of the shaping tub 3 by the feeder of conventional melting glass, the flow rate of melting glass changed, and change of the cross section of sheet glass 5 reached to about 3.5%, and separated from the excellent article specification that sheet glass 5 is thick. Then, although the laying temperature of the first tub 2 and the melting glass 1 in excurrent canal 2a was changed and flow rate change was amended, by the time the flow rate would be in the steady state, it required almost as long as 90 minutes, and sheet glass 5 in the meantime became a caret altogether.

[0020] Moreover, as this invention is shown not only in shaping which pulls out melting glass 1 from the direct glass drawer opening 4 but in drawing 2 Melting glass 1 is supplied to overflow slot 9a by which the cross section was formed in the upper part of Plastic solid 9 of an abbreviation wedge shape. After flooding melting glass 1 from the both sides of overflow slot 9a, making it flow down side-attachment-wall side 9b of the both sides of Plastic solid 9 and cooling to molding temperature, it is applicable also to the overflowing method which is made to unite each melting glass 1 by bottom [of Plastic solid 9] top 9c, and fabricates one sheet glass 5 continuously. In this case, it soak-izes near the temperature which supplies melting glass 1 to the first tub 2 which has excurrent canal 2a at the pars basilaris ossis occipitalis, and is suitable for shaping. Subsequently, in case melting glass 1 is supplied to the second tub 6 formed successively to overflow slot 9a of downward Plastic solid 9, melting glass 1 is continuously supplied in the condition of having made lower limit section 2b of excurrent canal 2a of the first tub 2 immersed in the bottom of oil-level 1a of the melting glass 1 in the second tub 6.

[0021] In addition, with the gestalt of implementation of the above-mentioned invention, although illustrated about shaping of sheet glass, not only this but this invention can be adapted also for shaping of a tubular object, a rod-like structure, etc.

[0022]

[Effect of the Invention] Even when changing the temperature of a shaping tub, the flow rate of melting glass does not change with above configurations, but this invention does so the practically excellent effectiveness which can fabricate melting glass continuously where a dimension is stabilized.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The explanatory view of the feeder of starting-this invention melting glass.
[Drawing 2] The explanatory view of the feeder of other melting glass concerning this invention.
[Drawing 3] The explanatory view of the feeder of the melting glass by the conventional technique.
[Description of Notations]
1 Melting Glass
1a Oil level
2 First Tub
2a Excurrent canal
2b Lower limit section
3 Shaping Tub
4 Glass Drawer Opening
5 Sheet Glass
6 Second Tub
6a Insertion opening
7 Heating Element
8 Thermocouple
9 Plastic Solid

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* NOTICES *

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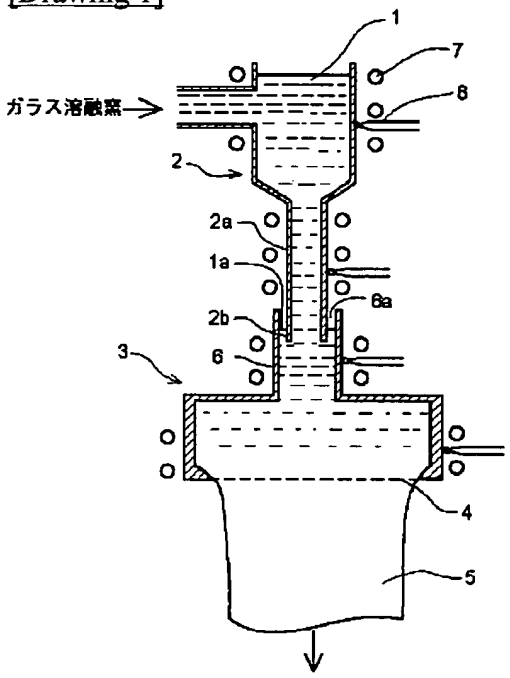
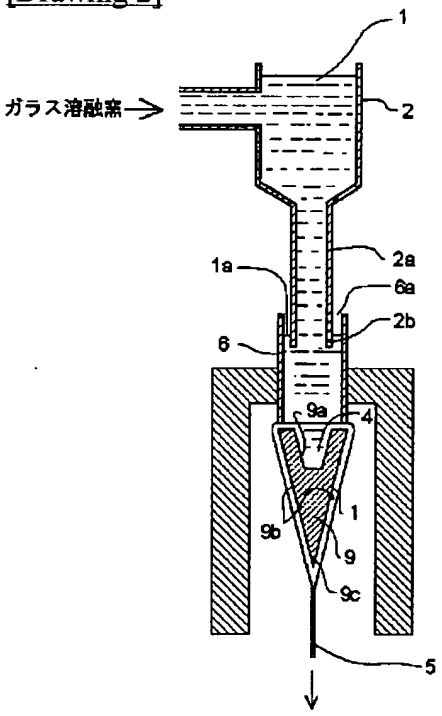
DRAWINGS

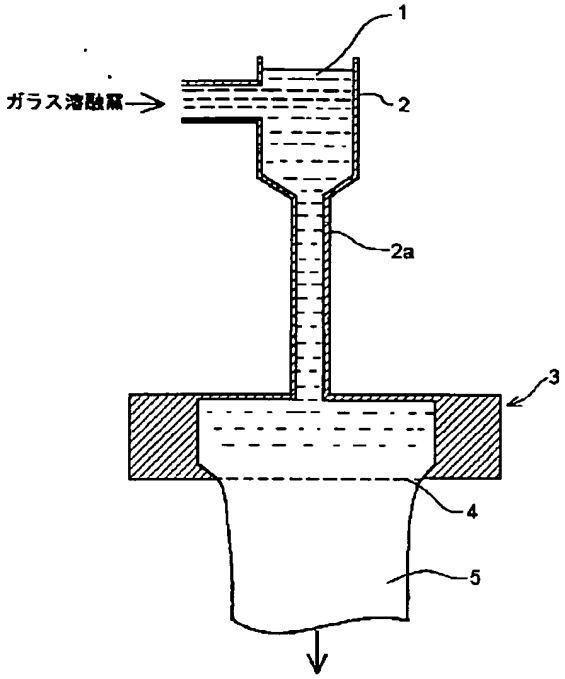
[Drawing 1]



[Drawing 2]



[Drawing 3]



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審査請求　未請求　請求項の数３　ＯＬ　（全５頁）

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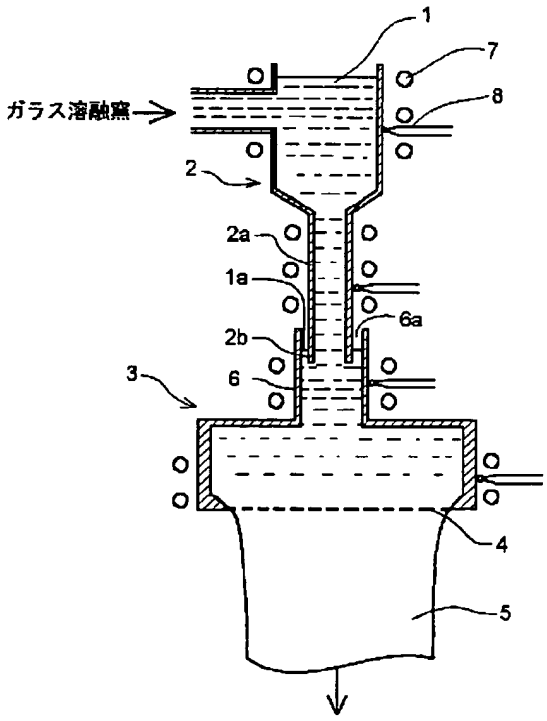
(54)【発明の名称】　溶融ガラスの供給方法および供給装置

(57)【要約】
【課題】　成形槽の温度を変化させた場合でも溶融ガラスの流量が変化せず、寸法が安定した状態で溶融ガラスを連続的に成形することができる供給方法および供給装置を提供する。
【解決手段】　本発明の装置は、底部に流出管２ａを有して溶融ガラス１を所定温度に均熱化する第一槽２と、下方の成形槽３に連設する第二槽６とを有し、第一槽２の流出管２ａの下端部２ｂを第二槽内６の溶融ガラス１の液面下１ａに浸漬状態で配設してある。また、本発明の方法は、溶融ガラス１を第一槽２で所定温度に均熱化し、次いで溶融ガラス１を成形槽３に連設する第二槽６に供給する際、第一槽２の流出管２ａの下端部２ｂを第二槽６内の溶融ガラス１の液面１ａ下に浸漬させた状態で連続的に溶融ガラス１を供給する。



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【特許請求の範囲】

【請求項1】　溶融ガラスを底部に流出管を有する第一槽で所定温度に均熱化し、次いで前記第一槽の流出管より溶融ガラスを成形槽に連設する第二槽に供給する際、前記第一槽の流出管の下端部を前記第二槽内の溶融ガラスの液面下に浸漬させた状態で連続的に溶融ガラスを供給することを特徴とする溶融ガラスの供給方法。

【請求項2】　底部に流出管を有して溶融ガラスを所定温度に均熱化する第一槽と、下方の成形槽に連設する第二槽とを有し、前記第一槽の流出管の下端部を前記第二槽内の溶融ガラスの液面下に浸漬状態で配設してなることを特徴とする溶融ガラスの供給装置。

【請求項3】　第一槽、流出管、第二槽及び成形槽が、それぞれ独立した加熱手段及び温度センサを有し、各温度センサに接続され各加熱手段により内部の溶融ガラスの温度をそれぞれ独立して自動制御可能な温度調節器を備えたことを特徴とする請求項2に記載の溶融ガラスの供給装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は板ガラス等のガラス物品を溶融ガラスから連続的に成形する際の溶融ガラスの供給方法および供給装置に関する。

【0002】

【従来の技術】一般に、ガラス物品を連続的に成形する場合、例えば、薄い板ガラスを製造する際、ガラス溶融窯でガラス原料を加熱して溶融ガラスに溶解し、溶融ガラスを清澄し、十分に撹拌して成形に適した温度付近まで温度を低下させた後、図3に示すように、溶融ガラス1を、底部に流出管2aを備えた第一槽2内で成形に適した温度付近に均熱化した後、流出管2aを通じて成形槽3に供給する。成形槽3では、成形温度に調節された溶融ガラス1が略矩形状のガラス引出口4から引き出されて板ガラス5を連続的に成形している。

【0003】従来の溶融ガラスの供給装置では、第一槽2の溶融ガラス1は流出管2aで成形槽3に直接供給されるようになっている。

【0004】

【発明が解決しようとする課題】しかしながら、板ガラス5の肉厚等の寸法を調整するために成形槽3の温度を上昇または下降させた場合、それに伴って流出管2aから供給される溶融ガラス1の温度も変化してガラス引出口4から引き出される溶融ガラス1の流量が変化するので、板ガラス5の断面寸法全体が変化して板ガラス5の寸法が良品の範囲から逸脱する。その流量変化を補正するために第一槽2あるいは流出管2a内の溶融ガラス1の設定温度を変更すると流量が定常状態になるまでのしばらくの間、良品の板ガラス5が得られないという問題点がある。

【0005】本発明の目的は、上記の問題点を解決した

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溶融ガラスの供給方法および供給装置を提供することである。

【0006】

【課題を解決するための手段】本発明に係る溶融ガラスの供給方法は、溶融ガラスを底部に流出管を有する第一槽で所定温度に均熱化し、次いで前記第一槽の流出管より溶融ガラスを成形槽に連設する第二槽に供給する際、前記第一槽の流出管の下端部を前記第二槽内の溶融ガラスの液面下に浸漬させた状態で連続的に溶融ガラスを供給することを特徴とする。

【0007】また、本発明の溶融ガラスの供給装置は、底部に流出管を有して溶融ガラスを所定温度に均熱化する第一槽と、下方の成形槽に連設する第二槽とを有し、前記第一槽の流出管の下端部を前記第二槽内の溶融ガラスの液面下に浸漬状態で配設してなることを特徴とする。

【0008】さらに、本発明の溶融ガラスの供給装置は、第一槽、流出管、第二槽及び成形槽が、それぞれ独立した加熱手段及び温度センサを有し、各温度センサに接続され各加熱手段により内部の溶融ガラスの温度をそれぞれ独立して自動制御可能な温度調節器を備えたことを特徴とする。

【0009】上記構成において、第一槽の底部の流出管中を流下する溶融ガラスの流量は、第一槽の溶融ガラスの液面から第二槽内の溶融ガラスの液面までの高さ、即ち、ヘッド高と、流出管中を流下する溶融ガラスの温度に連動する粘度によって決まる。本発明では、流出管中を流下する溶融ガラスの流量が一定になるように、流出管と成形槽とを切り離して溶融ガラスの液面が生じる第二槽を介在させることにより、成形槽の温度を変化させた場合でも流出管を流下する溶融ガラスの温度を一定に維持することが重要である。また、流出管内の溶融ガラスの温度を一定に維持する上で、流出管と第二槽との伝熱面積を小さくしておくことが好ましい。

【0010】

【作用】本発明によれば、溶融ガラスの供給装置が底部に流出管を有して溶融ガラスを所定温度に均熱化する第一槽と、下方の成形槽に連設する第二槽とを有し、第一槽の流出管の下端部を第二槽内の溶融ガラスの液面下に浸漬状態で配設してあり、溶融ガラスを第一槽で所定温度に均熱化し、次いで第一槽の流出管より溶融ガラスを第二槽に供給する際、第一槽の流出管の下端部を第二槽内の溶融ガラスの液面下に浸漬させた状態で連続的に溶融ガラスを供給するので、成形槽の温度を上昇させた場合、成形される溶融ガラスの流量が一時的に増加して、第二槽内の溶融ガラスの液面が低くなり、それにより成形される溶融ガラスの流量が減少して流量の増加が相殺される。一方、成形槽の温度を降下させた場合、成形される溶融ガラスの流量が一時的に減少して、第二槽内の溶融ガラスの液面が高くなり、それにより成形される溶

融ガラスの流量が増加して流量の減少が相殺される。このように、成形槽の温度を変化させても、溶融ガラスの流量を一定に維持することができる。

【００１１】また、本発明の溶融ガラスの供給装置は、第一槽、流出管、第二槽及び成形槽が、それぞれ独立した加熱手段及び温度センサを有し、各温度センサに接続され各加熱手段により内部の溶融ガラスの温度をそれぞれ独立して自動制御可能な温度調節器を備えているので、成形槽の温度を変化させた場合でも、第一槽、流出管、第二槽の温度を独立して自動制御して各槽内の溶融ガラスの温度、即ち粘度を一定に維持することにより、溶融ガラスの流量をさらに安定化させることができるようになる。

【００１２】

【発明の実施の形態】本発明の実施例の説明図を図１に示す。図において１は溶融ガラスを、２は第一槽を、２ａは第一槽２の底部に接続された流出管を、３は成形槽を、４は略矩形状のガラス引出口を、５は板ガラスを、６は第二槽を、７は加熱手段として発熱体を、８は温度センサとして熱電対を各々示しており、前出の図３と同一部分には同一符号を付してそれぞれ示している。

【００１３】まず、本発明に係る溶融ガラスの供給装置の一例を説明する。

【００１４】本発明の供給装置は、図１に示すように、底部に流出管２ａを有し、溶融ガラス１の全体を成形温度よりも所定温度高い温度に均熱化する第一槽２と、成形槽３に連設して挿入口６ａを有する第二槽６とが、流出管２ａの下端部２ｂを第二槽６の挿入口６ａに挿入させた配置となっており、供給装置の稼働時には第二槽６内の溶融ガラス１の液面１ａ下に流出管２ａの下端部２ｂが浸漬した状態になる。第二槽６から成形槽３に供給されて成形温度に調整された溶融ガラス１は、略矩形状のガラス引出口４からローラー対（図示せず）により引き出され、所望の寸法形状の板ガラス５が連続的に成形されるようになっている。

【００１５】また、第一槽２、流出管２ａ、第二槽６、成形槽３は、それぞれ独立した発熱体７及び熱電対８を有し、各熱電対８に接続され各発熱体７により内部の溶融ガラス１の温度をそれぞれ独立して自動制御可能な温度調節器（図示せず）を備えている。

【００１６】次に、本発明に係る溶融ガラスの供給方法の一例を説明する。

【００１７】本発明の供給方法では、まず、ガラス溶融窯（図示せず）によりガラス原料を約１６００℃以上に加熱して溶融ガラスに溶解し、溶融ガラスを清澄して気泡や異物等を取り除き、溶融ガラスを十分に撹拌して脈理をなくし、溶融ガラスの粘度が10^4～10^5ポイズの範囲になる温度付近、例えば、１２００℃付近まで温度を低下させる。所定の温度になった溶融ガラスを、図１に示すように、流出管２ａを備えた第一槽２に供給して溶融ガラス１全体を均熱化し、次いで流出管２ａを通じて第二槽６に溶融ガラス１を供給する際、流出管２ａの下端部２ｂを溶融ガラス１の液面１ａ下に浸漬させた状態で供給する。第二槽６から成形槽３内に供給された溶融ガラス１は、その粘度が成形に適した約10^5ポイズになる成形温度、例えば、１１５０℃に調節され、成形温度になった溶融ガラス１を略矩形状のガラス引出口４からローラー対（図示せず）等の牽引手段により連続的に引き出して所望の寸法形状の板ガラス５に成形する。

【００１８】上記の供給装置により板ガラス５を連続的に成形している時に、板ガラス５の断面形状、反り等を調整するために成形槽３の底部に開口している略矩形状のガラス引出口４の温度を、例えば、５℃変化させた場合、板ガラス５の断面積の変化は０．５％以内であり、板ガラス５が肉厚の良品規格を外れることはない。

【００１９】これに対して従来の溶融ガラスの供給装置で成形槽３のガラス引出口４の温度を５℃変化させた場合、溶融ガラスの流量が変化し板ガラス５の断面積の変化は約３．５％に達し、板ガラス５は肉厚の良品規格を外れた。そこで、第一槽２及び流出管２ａ内の溶融ガラス１の設定温度を変更して流量変化を補正したが、流量が定常状態になるまでに約９０分も要し、その間の板ガラス５は全てカレットになった。

【００２０】また、本発明は、直接ガラス引出口４から溶融ガラス１を引き出す成形に限らず、図２に示すように、断面が略くさび形の成形体９の上部に形成されたオーバーフロー溝９ａに溶融ガラス１を供給し、溶融ガラス１をオーバーフロー溝９ａの両側から溢れさせて成形体９の両側の側壁面９ｂを流下させ成形温度まで冷却した後、各々の溶融ガラス１を成形体９の下頂部９ｃで融合させ１枚の板ガラス５を連続的に成形するオーバーフロー法にも適用可能である。この場合、溶融ガラス１を底部に流出管２ａを有する第一槽２に供給して成形に適する温度付近に均熱化し、次いで下方の成形体９のオーバーフロー溝９ａに連設する第二槽６に溶融ガラス１を供給する際、第一槽２の流出管２ａの下端部２ｂを第二槽６内の溶融ガラス１の液面１ａ下に浸漬させた状態で連続的に溶融ガラス１を供給する。

【００２１】なお、上記発明の実施の形態では、板ガラスの成形に関して例示したが、これに限らず、本発明は、管状体、棒状体等の成形にも適応可能である。

【００２２】

【発明の効果】本発明は、上記のような構成により、成形槽の温度を変化させた場合でも溶融ガラスの流量が変化せず、寸法が安定した状態で溶融ガラスを連続的に成形することができる実用上優れた効果を奏するものである。

【図面の簡単な説明】

【図１】本発明に係るの溶融ガラスの供給装置の説明図。

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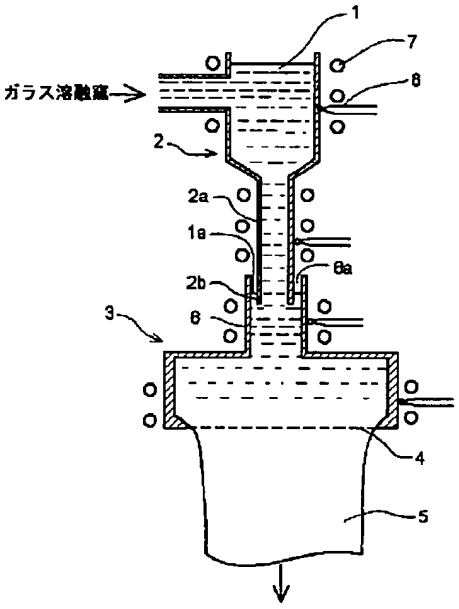
【図２】本発明に係る他の溶融ガラスの供給装置の説明図。

【図３】従来技術による溶融ガラスの供給装置の説明図。

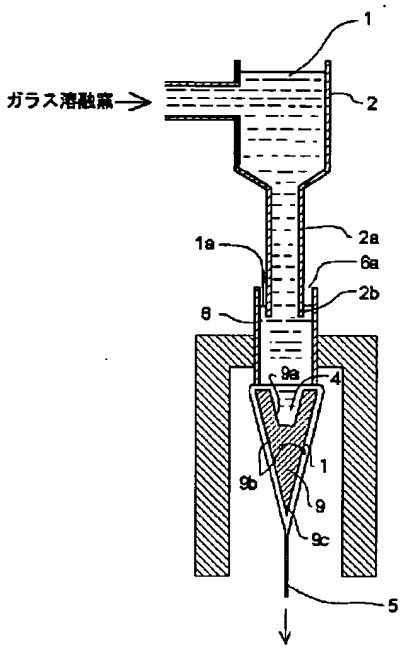
【符号の説明】

1　溶融ガラス
1a　液面
2　第一槽
2a　流出管
2b　下端部
3　成形槽
4　ガラス引出口
5　板ガラス
6　第二槽
6a　挿入口
7　発熱体
8　熱電対
9　成形体

【図1】



【図2】



【図3】